CROP ROTATION

Keeping soil and crops healthy

Instead of growing the same crop in the same field year after year, many farmers plant one type of crop one year, a different crop the next, and so on, in sequence. This is called **crop rotation**.

Every crop is prone to being affected by specific insects, weeds and/or diseases. Rotating crops reduces these risks. Different crops also require different amounts of nutrients. Rotating crops with varying types of root structures allows crops to use moisture and nutrients from different soil depths.

CROP ROTATION: AN EXAMPLE

On the Canadian Prairies, a typical crop rotation involves cereals (wheat, barley, oats), oilseeds (canola, flax, sunflowers), and legumes (pulses such as field peas, beans, lentils, chickpeas). Crop rotations are usually based on a 3-year or 4-year cycle. For example, one year a farmer might grow canola, the next year wheat, the following year field peas, and then another cereal crop such as barley or oats.

Many studies show that rotation is the most effective way to improve and maintain crop yields, soil fertility, and control pests and disease.

Vegetable farmers in Canada also rotate their crops, alternating between different families of vegetables, or alternating vegetable crops with cereal crops such as corn, or forage crops (alfalfa, clover) used for feeding livestock.

CROP ROTATION

ROTATION PLANNING

When farmers make decisions about what to grow in a crop rotation, they consider:

- **Crop residues** – What's left after crops are harvested is called **crop residues**. Crop residues add organic matter to soil, which helps soil retain moisture, improves movement of water throughout the soil, and improves **soil structure** (how soil particles are clumped together and arranged). Some crops produce more residue than others. For example, cereal crops (wheat, barley, rye) have higher crop residue than oilseed crops (flax, canola, mustard). Too much residue in a field can make it difficult to seed future crops.
- **Soil nutrient requirements** – Farmers routinely test soil to see what nutrients are available in it, which then helps them determine the amount of each nutrient needed to grow the crop they selected.
- **Insect, disease and weed control** – Rotation can break life cycles of most insects and diseases. For example, many diseases affect specific crops. Crop rotation with other crops will reduce levels of disease.

  Crop rotation is also an important tool for weed management. Some weeds are more difficult to control in certain crops, e.g., wild oats in tame oats. Many diseases affect specific crops. Crop rotation with other crops will reduce levels of disease.
- **Marketability** – Farmers consider market prices when they choose which crops to grow. For example, if the market price of lentils is low, then a farmer may choose to plant a crop that has potential for a higher price.
- **Equipment** – Different crops may require different equipment for seeding, harvesting, e.g., vegetable crops versus grain crops.

Crop rotation improves biodiversity of farms

Biodiversity refers to the number of species and ecosystems in a region and the health of an ecosystem. Biodiversity can reduce the impact harmful insects have on crops, reduce the amount of fertilizer required, improve soil health and lengthen the period that crops bred to be disease resistant remain resistant.[1]

Just because you see lots of the same type of crop in many adjoining fields doesn't mean that farmers don't rotate their crops. They may grow the same crop in many of their fields one year, and a different type of crop the following year.

Checking lentil crop

THE AMAZING LEGUME

Nitrogen is one of the nutrients that plants need to grow and survive. Legumes, such as pulses, capture nitrogen from the air and convert it into a form that plants can use, eliminating the need for nitrogen fertilizer.

Rotating a variety of crops reduces the need for pesticide use, which lowers farmers' costs and benefits the environment. Crop rotations also improve the biodiversity on farms by providing diverse habitats for birds and other wildlife.